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Journal of Policy Modeling 38 (2016) 65–95

Journal of Policy Modeling

www.elsevier.com/locate/jpm

Population aging and China's social security reforms

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Received 24 June 2015; received in revised form 30 August 2015; accepted 10 September 2015
Available online 17 October 2015

Abstract

China's population aging problem is more severe than other countries because of the one-child policy adopted in the early 1980s, and the current social security system is not sustainable. A two-sector overlapping generations model is developed to analyze China's social security reforms. It is shown that if the government does nothing to reform the system, maintaining the current replacement and contribution rates, social security debt will be explosive. Various reforms are considered, including adjusting the replacement rate while keeping the contribution rate constant, increasing the contribution rate while maintaining the current replacement rate, increasing the retirement age with the contribution rate being unchanged, increasing the retirement age with the replacement rate being unchanged, and switching to a fully-funded system by using government assets to pay the implicit social security debt. The effects of these reforms on capital accumulation, the output, and the welfare for each generation are simulated and compared.

JEL classification: E6; H3; O53

Keywords: Social security reforms; PAYG system; Funded system; Overlapping generations model; China

1. Introduction

China faces a severe problem of population aging because of the birth-control policy adopted in the early 1970s and the one-child policy adopted in the early 1980s. This paper discusses

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http://dx.doi.org/10.1016/j.jpolmod.2015.10.001

China's population aging problem and the resulting challenges to China's social security system. The effects of various reforms to the social security system on capital accumulation, the output, and welfare for individuals in a two-sector overlapping generations model are analyzed.

China's urban pension system features a large unfunded defined-benefit social pooling account, which is pay-as-you-go (PAYG) in nature, and a small funded defined-contribution personal account.[3] The social pooling account is the major part of the system (the employer contributes 20% of the employee's wage to this account) and the personal account is the minor part of the system (an individual contributes 8% of his/her wage to this account).[4] Since the social pooling account does not have enough revenue to cover social security payments, funds from personal accounts are diverted to fill the gap. Recently, China established a rural social security system in which young farmers contribute funds to their personal accounts (government also subsidizes each young farmer's personal account) and their parents receive a small amount of retirement benefits. China has continued expanding the current social security systems and in 2011 about 37% of employees were covered by the urban social security system and 100% of farmers were covered by the rural social security system.[5] The major challenge faced by the current system is the aging population. China's population age 65 or over accounted for 8.2% of the total population in 2010, 16.4% in 2030, 25.6% in 2050, and 30.2% in 2065![6] Thus, the current social security system will face severe revenue shortages without reform.

Most of the developed countries have established a PAYG social security system. Samuelson (1958) demonstrated that an introduction of an unfunded define-benefit PAYG social security system is Pareto improvement, because the initial old generation is better off while the current young and future generations will not be worse off in an OLG model with constant population growth. Recently, economists argue that, due to the decline in the population growth rate in recent decades, the United States and other industrial countries will face a social security account deficit in the near future if the current systems remain unchanged (see Gruber & Wise, 1997; Kotlikoff, 1996). Feldstein and Samwick (1996) and Kotlikoff (1996) called for privatization of the PAYG social security system, based on the argument that the rate of return from private investment is much higher than the rate of return from the current PAYG social security system.[7] Diamond

[3] With a defined-benefit social security system, a worker makes agreed-upon contributions to the employer's retirement plan and receives agreed-upon benefits upon retirement. With a defined-contribution system, a worker can contribute to a private account; the employer may or may not contribute. When retired, the worker receives whatever remains in the private account. With a funded social security system, the present value of benefits received should be equal to the contributions made by an individual. With an unfunded social security system, the present value of benefits received by the retiree may not be equal to the total contributions made by the person.

[4] Many suggested that China establish a pension system with a large personal account and a small social pooling account. The World Bank (1997) suggested that China adopt a unified pension system that combines a defined benefit basic public pillar with funded mandatory individual accounts, and the individual account should be the major part. Lau (2003) proposed a pension system for China which includes a basic pension financed by the government and a personal account for each employee (with 16% of wages equally shared by the employee and the employer).

[5] China National Bureau of Statistics (2012).

[6] United Nations, Department of Economic and Social Affairs, Population Division, 2011, World Population Prospects: The 2010 Revision, CD-ROM Edition.

[7] By introducing productive capital, many studies have shown that the unfunded define-benefit PAYG social security has an adverse effect on private savings and capital accumulation (see, for example, Blinder, Gordon, & Wise, 1981, Diamond & Hausman, 1984; Feldstein, 1974, 1996; Kotlikoff, 1979). However, Barro (1978) found that social security had no effects on the economy based on the time series data from 1929 to 1940 and 1947 to 1974, and Kopits and Gotur (1980) found that social security had positive effects on savings based on the data from fourteen industrial countries for the 1969–1971 period. Lucena and Braga de Macedo (1997) also addressed the issue of efficiency related to social security.